Update in Veterinary Medicine

Dr. Maria M. Crane
Zoo Atlanta
Overview of Discussion

- Medical management of captive orangutans
  - Preventative Medicine
  - Anesthesia Protocols
  - Vaccinations
  - TB testing
- Current Health Issue
Preventative Medicine

- **Quarantine** – 30 to 90 days
  - 120 days or longer if wild caught

- **Physical Examinations**
  - Frequency: 12 – 24 months
  - Palpation of the animal’s abdomen, musculoskeletal system, rectal palpation, thoracic auscultation, and exam of eyes, ears, oral cavity and urogenital system
Dental Exams

- Oral cavity exam
- Dental prophylaxis
  - Remove tartar & calculi
- Periodontal disease
- Tooth problems
  - Cavities, fractures
- Dental radiographs
Periodontal Disease
Blood Collection

- Sites: brachial, saphenous or femoral veins
- Complete blood count
- Serum chemistry panels
- Serum banking
Blood Collection

- Lipid panel
  - Cholesterol, triglycerides, HDL, LDL, VLDL
- Thyroid hormone testing
- Viral serology
- Blood typing
- Cardiac isoenzymes
Urinalysis

- Collection: clean catch or sterile urinary catheterization
- Data on bladder health, kidney function & diabetes
- Complimentary with CBC & serum chemistry profiles
Diagnostic Imaging

- Radiographs
  - Thoracic, abdominal, dental
- Ultrasound
  - Abdominal, reproductive
- Endoscopy
  - Bronchoscopy
  - Gastroscopy
- Computed Tomography
- Magnetic Resonance Imaging - MRI
  - Bronchoscopy
  - Gastroscopy
Radiographs
Abdominal Ultrasound Exam
Reproductive Ultrasound Exam
Bronchoscopy
Vaccinations

- Based on history and exposure risks
- Current vaccination recommendations for humans and animals
- Hand-raised neonates & naïve juveniles
Vaccinations

- Minimal Vaccines Recommendations
  - Polio
  - Tetanus
  - Measles

- Additional Vaccines
  - Rabies
  - Influenza A & B
  - West Nile Virus
  - Hepatitis B
Additional Vaccinations

- **Hand-raised**
  - Pneumococcal vaccine
  - Hepatitis B
  - Haemophilus influenzae type b

- **Geriatric**
  - Pneumococcal vaccine
Parasite Control

- Fecal examinations
  - Direct exam, floatation & sedimentation
- Frequency
  - 2 – 4 times a year
- Fecal culture & sensitivity
  - *Salmonella* spp., *Shigella* spp., *Campylobacter* spp., *E. coli* strains, *Yersinia* spp.
Tuberculosis (TB)

- Significant cause of morbidity and mortality in domestic and wild animals worldwide
- Zoonotic disease
- Potential problems with TB
  - Restriction of animal movement
  - Issues associated with human health
  - Euthanasia of potentially healthy animals
Tuberculosis

- TB complex comprised of pathogenic *Mycobacterium* spp.
  - *M. tuberculosis*, *M. bovis*, *M. africanum*, *M. microti* and *M. pinnipediti*

- Orangutans: *M. tuberculosis* & *M. bovis*
  - *M. avium* – atypical mycobacterial
TB Testing

- Guidelines for testing based on standards
  - World Organization for Animal Health (OIE)
  - Centers for Disease Control (CDC)
  - National Institutes of Health (NIH)
  - Animal Health Committee of AZA (AHC)
Problems with TB testing

- Orangutans – non-specific reaction
- Not one test is 100% reliable for detecting TB in zoo animals
- Routine screening and clinical evaluation of suspect cases requires multiple tests
Mycobacterial Testing

- Intradermal test with old mammalian tuberculin
- Thoracic radiographs
- Gastric, tracheal or bronchoalveolar lavage
  - C&S (8 weeks or >)
  - acid fast stain
Additional Mycobacterial Testing

- **Serologic tests**
  - Enzyme-linked immunosorbent assay
    - ELISA
  - Multiantigen-print immunoassay
    - MAPIA
  - Detect antibodies

- **Immunooassays**
  - Primagam
  - Cell-mediated response
    - Cytokine production
  - Polymerase chain reaction (PCR)-amplified DNA probes
    - Identification of mycobacterium species
    - Test culture-negative samples
Necropsy

- Standardized Necropsy Report for Great Apes
- Gross examination and histopathology
- Bacterial culture if infection suspected
- Collect Blood – bank, viral serology, toxicology
- Send Reports to Vet advisor & Pathology advisor
Chemical Immobilizations

- Injectable anesthetics for inductions
  - Ketamine alone
  - Ketamine combined with Midazolam, Diazepam, Butorphenol or Medetomidine
  - Tiletamine/zolazepam or Telazol®

- Gas Anesthesia
  - Isoflurane or Sevoflurane
Intubation

- Intubation to provide gas anesthesia for longer procedures

Problems
- Laryngospasm
- Inserting endotracheal tube too deeply
Anesthetic Monitoring

- Heart Rate
- Peripheral pulses
- Respiratory - rate & depth
- Body temperature
Anesthetic Monitoring

- Pulse oximetry
- Electrocardiography
- Blood Pressure
- End-tidal Capnography
- Intravenous catheter & fluid therapy
IV catheter
Fluid Therapy
Current Health Issues

- Respiratory Disease
  - Airsacculitis
  - Pneumonia
  - Sinusitis
Airsacculitis
Airsacculitis
Airsacculitis Surgery
Marsupialized Air Sac
Cardiovascular Disease

- Heart Failure
- Fibrosoing Cardiomyopathy

Risk Factors:
- Genetics
- Blood pressure
- Diet
- Exercise
- Stress
- Age – related
Gastrointestinal Problems

- Diarrhea
- Constipation
- Obesity